Table 1: Production data of Examples 2,3 and 3

Example	2	3	4
Ethylene concentration in loop reactor, mol-%	6.7	6.7	6.7
Hydrogen to ethylene ratio in loop reactor, mol/kmol	235	265	305
1-butene to ethylene mole ratio in loop reactor, mol/kmol	570	514	0
Polymer production rate in loop reactor, kg/h	25	26	25
MFR_2 of polymer produced in loop reactor, g/10 min	300	580	300
Density of polymer produced in loop reactor, kg/m^3	951	951	975
Ethylene concentration in gas phase reactor, mol-%	19	7.8	8.2
Hydrogen to ethylene ratio in gas phase reactor, mol/kmol	3	7	8
1-butene to ethylene mole ratio in gas phase reactor, mol/kmol	645	460	480
Average particle size of the powder, mm	0.38	0.36	ND
MFR_2 of the final polymer, g/10 min	0.47	0.21	ND
MFR_{21} of the final polymer, g/10 min	51	22	20
Density of the final polymer, kg/m^3	922	923	931
Split, loop/gpr	45/55	41/59	41/59

ND denotes that the respective property has not been determined

Example 6

The procedure of Example 5 was repeated, except that the polymer composition comprised of 40 % by weight of polymer produced in Example 2 as the bimodal polyethylene composition and 60 % by weight of $CaCO_3$. The composition was then blown to a film and the resulting film was stretched in the machine direction 6 times its original length. The resulting film had a thickness of 19 μm, a basis weight of 16 g/m^2, tensile strength in the machine direction of 59 MPa, and in the transverse direction of 4.1 MPa. Tear strength in

Claims

1. A composition for making breathable films, the composition comprising:
(i) 20 – 50 %, based on the weight of the total composition, a bimodal polyethylene composition, further comprising

(i-a) a first low molecular weight component, which is a homopolymer of ethylene or a copolymer of ethylene and one or more C_4 to C_{10} alpha-olefins, having a melt flow rate MFR_2 of 50 to 500 g/10 min, preferably of 100 to 400 g/10 min and a density of 940 to 975 kg/m^3, preferably 945 to 975 kg/m^3, the first component being present in the bimodal polyethylene composition in an amount of 37 to 48 % by weight,

(i-b) at least a second component, which is a copolymer of ethylene and one or more C_4 to C_{10} alpha-olefins, having a higher molecular weight, a lower melt index and a lower density than the said first component, the second component being present in the bimodal polyethylene composition in an amount of 52 to 63 % by weight, so that the said bimodal polyethylene composition has a melt flow rate MFR_2 in the range of 0.1 to 4.0 g/10 min, preferably 0.1 to 0.8 g/10 min, MFR_{21} in the range of 15 to 200 g/10 min, preferably 15 to 70 g/10 min and a density of 918 to 935 kg/m^3,

(ii) 40 – 70 %, based on the weight of the total composition, a particulate filler, and
(iii) 0 – 30 %, based on the weight of the total composition, another olefin-based polymer.

2. The composition according to Claim 1, wherein the other olefin based polymer is selected from the group of homo- and copolymers propylene, 1-butene and 4-methyl-1-pentene.

3. The composition according to Claim 1 or 2, wherein the other olefin based polymer is a propylene homo- or copolymer, preferably a copolymer of propylene and ethylene.

4. The composition according to Claim 3, wherein the composition comprises of 5 to 20 %, based on the weight of the total composition, of the said propylene polymer.

5. The composition according to Claim 1, wherein the content of the particulate filler is 55 to 70 %.

6. A composition according to any one of the preceding claims, wherein the particulate filler is calcium carbonate.

7. A composition for making breathable films, the composition comprising:

(i) 20 – 50 %, based on the weight of the total composition, a bimodal polyethylene composition having the following properties (a) to (d):

(a) density from 912 to 935 kg/m^3;

(b) melt index MFR_2 from 0.1 to 0.8 g/10 min;

(c) melt index MFR_{21} from 15 to 70 g/10 min;

(d) flow rate ratio MFR_{21}/MFR_2 from 60 to 120,

(ii) 40 – 70 %, based on the weight of the total composition, a particulate filler, and

(iii) 0 – 30 %, based on the weight of the total composition, another olefin-based polymer.

8. A composition according to Claim 7, wherein the bimodal polyethylene composition has:

(e) a weight average molecular weight (M_w) from 150000 to 300000 g/mol;

(f) a ratio of the weight average molecular weight to the number average molecular weight (M_w/M_n) from 7 to 30; and

(g) a content of alpha-olefin comonomer units of 2 to 5 % by mole.

9. The composition according to any one of Claims 7 or 8, wherein the other olefin based polymer is a propylene homo- or copolymer, preferably a copolymer of propylene and ethylene.

10. The composition according to Claim 9, wherein the composition comprises of 5 to 20 %, based on the weight of the total composition, of the said propylene polymer.

11. The composition according to any one of Claims 7 or 8, wherein the content of the particulate filler is 55 to 70 %.

12. A composition according to any one of Claims 7 to 11, wherein the particulate filler is calcium carbonate.

13. The use of the composition according to any one of Claims 1 to 12 for making films.

14. A breathable polymer film, which film comprises a composition according to any one of Claims 1 to 12.

15. A film according to Claim 14 wherein the film has a water vapour transmission rate of more than 3000 $g/m^2/24$ h, preferably more than 4000 $g/m^2/24$ h.

16. A film according to any one of Claims 14 to 15, wherein the film has a basis weight of less than 25 g/m^2.

17. A process for producing a breathable polymer film, comprising the steps of:
(A) providing into an extruder a composition according to any one of Claims 1 to 12
(B) extruding the composition to a film
(C) stretching the film to produce a breathable film.

18. The process according to Claim 17, wherein the film is stretched with a stretching ratio of 3 to 10, preferably 4 to 7.

19. The process according to any one of Claims 17 to 18, wherein the bimodal polyethylene composition has been produced by a process comprising the steps of:

(i) subjecting ethylene, hydrogen and optionally comonomers to a first polymerisation or copolymerisation reaction in the presence of the polymerisation catalyst in a first reaction zone or reactor to produce a first polymerisation product having a low molecular weight with a melt flow rate MFR_2 of 50 to 500 g/10 min, preferably of 100 to 400 g/10 min and a density of 940 to 975 kg/m^3, preferably 945 to 975 kg/m^3,

(ii) recovering the first polymerisation product from the first reaction zone,

(iii) feeding the first polymerisation product into a second reaction zone or reactor,

(iv) feeding additional ethylene, comonomers and optionally hydrogen to the second reaction zone,

(v) subjecting additional ethylene and additional comonomer(s) and optionally hydrogen to the second reaction zone in the presence of the said polymerisation catalyst and the first polymerisation product,

(vi) to produce a polymer composition comprising from 41 to 48 % by weight of the low molecular weight polymer produced in step (i), and from 59 to 52 % by weight of the high molecular weight component produced in step (v),

(vii) the composition having a melt flow rate in the range MFR_2 of 0.1 to 4.0 g/10 min, preferably 0.1 to 0.8 g/10 min and a density of 918 to 935 kg/m^3, and

(viii) recovering the combined polymerisation product from the second reaction zone.

20. The process according to Claim 19, wherein at least part of the volatile components of the reaction medium are evaporated and removed from the first polymerisation product before the said first polymerisation product is introduced into the second reaction zone or reactor.